Nitrate Concentrations and Bacteriological Counts in Groundwaters from the Lower Fraser Valley, British Columbia—A Survey

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Abstract

As part of the Georgia Basin Ecosystem Initiative (GBEI), Environment Canada conducted a survey of groundwaters in 1998 at selected Lower Fraser Valley (LFV) sites. The survey included areas of intensive agricultural use (impacted sites) as well as those with no known agricultural activities (reference sites). Twenty sites (16 impacted and 4 reference) in several LFV aquifers were sampled for nutrients, bacteriological parameters, metals, organic contaminants, and estrogen/androgen screening tests.

This paper will present only nutrient and bacteriological results. Nitrate concentrations were elevated at four impacted sites—two were over 3 milligrams nitrogen per litre (mg N/L) and another two exceeded the Canadian Environmental Quality Guideline for Drinking Water of 10 mg N/L. The nitrate concentrations in reference sites were all < 1 mg N/L. Total and fecal coliform and *Escherichia coli* counts were zero at reference sites and positive at four impacted sites—with total coliform counts ranging from 2 to 1300 colonies per 100 ml.